

NON-PUBLIC?: N  
ACCESSION #: 9601160272  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Diablo Canyon Unit 1 PAGE: 1 OF 6

DOCKET NUMBER: 05000275

TITLE: Manual Reactor Trip Due to Heavy Debris Loading of  
Traveling Screens  
EVENT DATE: 12/13/95 LER #: 95-017-00 REPORT DATE: 01/10/96

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 050

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION:  
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:  
NAME: Donald H. Behnke - Senior TELEPHONE: (805) 545-2629  
Regulatory Services Engineer

COMPONENT FAILURE DESCRIPTION:  
CAUSE: C SYSTEM: KE COMPONENT: SCN MANUFACTURER: E281  
REPORTABLE NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On December 13, 1995, at 1033 PST, with Unit 1 in Mode 1 (Power Operation) at approximately 50 percent power, plant operators initiated a manual reactor trip of Unit 1 as required by OP AP-7, "Degraded Condenser," following debris loading of the traveling screens due to heavy swells from a major Pacific storm. The unit was stabilized in Mode 3 (Hot Standby) in accordance with emergency procedures. A 4-hour, non-emergency report was made to the NRC at 1248 PST in accordance with 10 CFR 50.72(b)(2)(ii).

Plant operators decreased power on Unit 2, separated the turbine generator from the grid, and stabilized the unit in Mode 2 (Start-up), at 1346 PST, to prevent damage to the traveling screens from heavy kelp loading.

Additional screen rakes are being added to the screens to improve the efficiency of debris removal. Simulator training has been provided to all five operating crews dealing with the loss of circulating water system screen functions.

The above actions are near term actions designed to reduce overall plant impact and damage to equipment. However, PG&E can not entirely eliminate the potential need to expedite manual reactor trips when high seas and dislodged plant life from the ocean bottom result in heavy debris loading on the traveling screens.

LER.TPL

END OF ABSTRACT

TEXT PAGE 2 OF 6

## I. Plant Conditions

Unit 1 was in Mode 1 (Power Operation) at 50 percent power.

## II. Description of Problem

### A. Summary

On December 13, 1995, at 1033 PST, plant operators initiated a manual reactor trip of Unit 1 as required by OP AP-7, "Degraded Condenser," following debris loading of the traveling screens due to heavy swells from a major Pacific storm. The unit was stabilized in Mode 3 (Hot Standby) in accordance with emergency procedures. A 4-hour, non-emergency report was made to the NRC at 1248 PST in accordance with 10 CFR 50.72(b)(2)(ii).

Plant operators decreased power on Unit 2, separated the turbine generator from the grid, and stabilized the unit in Mode 2 (Start-up), at 1346 PST, to prevent damage to the traveling screens from heavy kelp loading.

### B. Background

The circulating water system provides a continuous saltwater supply to the main condenser (KE), condensate cooler (KE)(HX), service water cooling system (BI), and intake cooling system (KE). The saltwater enters the cooling water intake structure by passing through bar racks and then through traveling screen assemblies. Each unit has two single-stage circulating water

pumps (CWP) and each CWP has three traveling screens. CWP 1-1 is protected by traveling screens 1-1, 1-2, and 1-3. CWP 1-2 is protected by traveling screens 1-4, 1-5, and 1-6. The bar racks and traveling screens prevent floating debris and sea life from entering the system and restricting flow through the main condenser.

The screens for the CWPs are operated either in manual or automatic. When in manual, the screens are controlled by the operator and can be operated in slow or high speed.

OP AP-7 provides guidance for operators in response to a loss of condenser vacuum, condenser fouling, and traveling screen problems. Using the differential pressure (dp) measured across the traveling screens, the procedure provides guidance as to when to secure a CWP and when to manually trip the reactor in order to prevent excessive damage to the traveling screens.

19501700.DOC

TEXT PAGE 3 OF 6

### C. Event Description

On December 13, 1995, Units 1 and 2 were at 100 percent power with the intake structure traveling screens for the circulating water system (CWS) operating in fast speed in manual to handle heavy debris loading of the traveling screens resulting from heavy swells associated with a major Pacific storm. At 0050 PST, plant operators commenced a ramp down of Unit 1 to 50 percent power to clean the CWS. At 0309 PST, Unit 1 was stabilized at 50 percent power. At 0430 PST, due to increasing condenser dp, CWP 1-1 was shutdown to backflush the condenser. At 0501 PST, CWP 1-1 was returned to service.

At 0519 PST, in response to increasing condenser dp, plant operators commenced ramping Unit 2 to 50 percent power to clean the condenser.

At 0615 PST, CWP 1-2 was shutdown for condenser backflushing. At 0649 PST, CWP 1-2 was returned to service.

At 0723 PST, Unit 2 was stabilized at 52 percent power.

At 0849 PST, due to the rapid increase in condenser dp as a result of storm debris, CWP 1-2 was again shutdown to backflush

the condenser. At 0915 PST, CWP 1-2 was returned to service. At 0936 PST, CWP 1-1 was again shutdown to backflush the condenser. At 1032 PST, Unit 1 traveling screen 1-5 stopped due to motor overload. At 1033 PST, a manual unit trip was initiated from 50 percent power in accordance with OP AP-7, to prevent further damage to the traveling screens. Unit 1 was stabilized in Mode 3.

At 1126 PST, Unit 2 CWP 2-1 was shutdown in accordance with OP AP-7 due to the dp across the traveling screens. At 1145 PST, PG&E decided to shutdown Unit 2 to prevent traveling screen damage. At 1149 PST, plant operators commenced a ramp down to take Unit 2 off-line. Plant operators decreased power on Unit 2, separated the turbine generator from the grid, and stabilized the unit in Mode 2 at 1346 PST, to prevent damage to the traveling screens from heavy kelp loading.

At 1248 PST, a 4-hour non-emergency report was made to the NRC in accordance with 10 CFR 50.72(b)(2)(ii).

#### D. Inoperable Structures, Components, or Systems that Contributed to the Event

None.

19501700.DOC

TEXT PAGE 4 OF 6

#### E. Dates and Approximate Times for Major Occurrences:

1. December 13, 1995, at 0050 PST: Unit 1 power ramp down was initiated.

2. December 13, 1995, at 1033 PST: Event/Discovery Date- Unit 1 was manually tripped at approximately 50 percent power.

4. December 13, 1995, at 1248 PST: A 4-hour, non-emergency report was made to the NRC in accordance with 10-CFR-50.72(b)(2)(ii).

#### F. Other Systems or Secondary Functions Affected.

None.

#### G. Method of Discovery:

The event was immediately apparent to plant operators due to alarms and indications received in the control room.

#### H. Operator Actions:

Licensed plant operators in the control room responded in accordance with established emergency procedures. They confirmed the reactor trip, verified proper engineered safety feature (ESF) actuations, closed the main steam isolation valves to prevent excessive cooldown, and initiated other manual actions to stabilize the unit in Mode 3.

#### I. Safety System Responses:

1. The reactor trip breakers (JC)(BKR) opened.
2. The main turbine (TA)(TRB) tripped.
3. The control rod drive mechanism (AA)(DRIV) allowed the control rods to drop into the core.

19501700.DOC

TEXT PAGE 5 OF 6

4. The motor driven auxiliary feedwater pumps (BA)(P) started.
5. All five containment fan coolers (EK)(FAN) started.
6. All four 10 percent steam dump valves opened to relieve steam generator pressure.

### III. Cause of the Problem

#### A. Immediate Cause:

Both units were shutdown to prevent damage to the traveling screens due to debris loading.

#### B. Root Cause:

The root cause of the event was debris loading on the circulating water system traveling screens during a period of high seas that dislodged plant life from the ocean bottom.

#### IV. Analysis of the Event

A manual reactor trip from 50 percent power is a previously analyzed FSAR Update, Chapter 15, Condition II event. The 10 percent steam dump valves and the pressurizer controlled the reactor coolant temperature and pressure in accordance with plant design basis. Therefore, the health and safety of the public were not adversely affected by this event.

#### V. Corrective Actions

##### A. Immediate Corrective Actions:

The damaged traveling screens were repaired.

##### B. Corrective Actions to Prevent Recurrence:

The following are near term actions designed to reduce overall plant impact and damage to equipment. However, PG&E can not entirely eliminate the potential need to expedite manual reactor trips when high seas and dislodged plant life from the ocean bottom result in heavy debris loading on the traveling screens.

19501700.DOC

TEXT PAGE 6 OF 6

1. PG&E is installing additional "kelp rakes" for each traveling screen to improve the efficiency of debris removal.

2. PG&E provided all five operating crews with additional simulator training dealing with loss of CWP screen functions.

#### VI. Additional Information

##### A. Failed Components:

Component: Intake traveling screens.

Manufacturer: Envirex

B. Previous LERs on Similar Problems:

LER 2-94-012-00, "Manual Reactor Trip Due to Circulating Water Pump Cavitation as a Result of Intake Screen Fouling." On December 19, 1994, at 1014 PST, with Unit 2 in Mode 1 at approximately 35 percent power, a manual Unit 2 trip was initiated due to CWP cavitation due to intake screen fouling. Most of the corrective actions for the LER were focused on minimizing condenser fouling. Therefore, the corrective actions were not effective in preventing the current event which involved traveling screen fouling.

LER 2-95-002, "Manual Reactor Trip Due to Heavy Debris Loading and Damage to Traveling Screens." On September 23, 1995, at 0911 PDT, with Unit 2 in Mode 1 at approximately 40 percent power, plant operators initiated a manual Unit 2 reactor trip when the traveling screens stopped running due to debris loading. The corrective actions for this event were the installation of new kelp rakes and the revision of OP AP-7 to add actions to reduce or prevent damage to the traveling screens. The new kelp rakes had not been installed prior to the present event; therefore, this corrective action could not have prevented the December 13, 1995, event. An evaluation has determined that even if the above actions had been completed, this event would not have been prevented.

19501700.DOC

ATTACHMENT TO 9601160272 PAGE 1 OF 1

Pacific Gas and Electric Company

77 Beale Street, Room 1451-B14A Gregory M. Rueger  
San Francisco, CA 94105 Senior Vice President and  
Mailing Address General Manager  
Mail Code B14A Nuclear Power Generation  
P.O. Box 770000  
San Francisco, CA 94177  
415/973-4684  
Fax 415/973-2313

PG&E

January 10, 1996

PG&E Letter DCL-96-014

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Docket No. 50-275, OL-DPR-80  
Diablo Canyon Unit 1  
Licensee Event Report 1-95-017-00  
Manual Reactor Trip Due to Heavy Debris Loading to Traveling Screens

Dear Commissioners and Staff:

Pursuant to 10 CFR 50.73(a)(2)(iv), PG&E is submitting the enclosed Licensee Event Report concerning a manual reactor trip due to heavy loading of traveling screens during a Pacific storm. This event did not adversely affect the health and safety of the public.

Sincerely,

Gregory M. Rueger

cc: Steven D. Bloom  
L. J. Callan  
Jennifer Dixon-Herrity  
Kenneth E. Perkins  
Michael T. Tschiltz  
Diablo Distribution  
INPO

Enclosure

N0001925

DPS/2246

\*\*\* END OF DOCUMENT \*\*\*

---